H.Om.E Project to xCoAx 2023

Yuma Taru, Taichung, Taiwan
lihan.workshop@gmail.com
Anchi Lin (Ciwas Tahos), Taoyuang, Taiwan
info@anchilin.ca
Satoru Sugihara, ATLV, Tokyo, Japan
s@atlv.org
Maria Jose Riòs, vyv, Santiago, Chile
lelex76@gmail.com
Ricardo Vega, UC University,Santiago, Chile
rvegamora@gmail.com
Shih Wei Chieh, wisemouseculture, Taipei, Taiwan
shihweichieh@icloud.com
Tsangsar Kunga, Baromkagyu Bodhi Center, Taoyuang, Taiwan
Kunga008@yahoo.com

Abstract. The H.Om.E. Project stands for Heritage, Om, and Earthship. The central letters, "Om," symbolize the Sanskrit word Ōṃ. The letter "E" signifies the goal of incorporating earthship architecture into the design. The project's primary objectives are: 1) To empower the Mapuche, Atayal, and Tibetan cultures by facilitating their collaboration with contemporary art and science institutions at the data level. 2) To examine how global and interdisciplinary art projects can work together and how this network benefits each minority culture in the project. 3) To generate artworks interdisciplinary and encompasses astronomy, textile and architecture. The aim is to create a harmonious narrative that incorporates ancestral and modern perspectives, recognizes the relationship between ancestral and modern technology as complementary, and brings these various disciplines together into a cosmos. In order to explore an innovative planetary view of our living environment, it is crucial to review our past, particularly in technological and anthropological perspectives in this project. At present, this research is ongoing, and this paper presents an overview of its current fieldwork and the attempts to innovate a design and methodology for a woven architecture as concept sculpture.

Keywords: Atayal textiles, Andeans textiles, data visualization, cultural astronomy, woven architecture, data sovereignty.

1. The international networked fieldworks in previous projects

The international collaboration in the current project builds upon three previous collaborative projects that focused on different types of minority culture. These projects were the first step to establish the first interface to connect the local ancestral context with modern technology. The current H.Om.E Project seeks to build upon these previous efforts by further strengthening the connection between three different cultural contexts through collaborative creation of art content that incorporates knowledge of textiles, astronomy and architecture from each culture. These projects can be seen as fieldworks encouraging global collaboration and network. For example, the I_C Project[1] introduces the way to empower the Mapuche cultural astronomy by working with data from the modern telescope ALMA[2], has inspired the Tibetan participant's act to preserve their ancient calendar system and cosmo view. Tribe Against Machine[3] was an annual summer camp in 2017 and 2018, it fostered the collaboration of Atayal textiles and smart materials.

1.1 Tribe Against Machine

Tribe Against Machine was a 10-days annual summer camp in Taiwan, organized by Lihan Workshop and its founder Yuma Taru in 2017 and 2018, the project founder is Shih Wei Chieh. It calls artists, hackers and activists to work with ancestral cultures materially and immersively. Workshops and fieldworks were the main tool for exchanging smart material and ethnic craft knowledge. For example, prototypes mixed with smart materials

[1] I_C Project, https://triptico.vestibles.cl/sobre-proyecto-i_c/
[2] Atacama Large Millimeter/submillimeter Array, https://www.almaobservatory.org/
[3] Tribe Against Machine, https://tribe-against-machine.org/

and indigenous culture were experimented from the collaborations between artists in the event, such as a replicant of Atayal bride headset installed with lilypad as wearable antenna, Atayal hunter cape made of bio-plastic and distant sensor. The participants were mainly from the weaver network of Yuma Taru and the e-textile communities internationally.

Fig. 1. A replica of the traditional Atayal bride headset embedded with a Lilypad made by the artists during Tribe Against Machine. The headpiece combined with classic traditional Atayal costumes and classic e-textile tools, materials also symbolize a wonderful sign of cooperation between the two communities.

1.2 The Mind of a Greenhouse and Tashi Gatsen Charity School

The participation of Tibetan culture in the H.Om.E Project was due to a greenhouse project in 2018. The greenhouse project[4] takes root in a charity initiative by the artist Shih Wei Chieh and the scientist Wiriya Rattanasuwan, who engaged with the Tashi Getsen Charity School founded by Tsangsar Kunga Renpoche and the local population of Nangqen the building of a greenhouse to provide food year-round for the orphan children sheltered by the school. The difficulty to feed all the students is particularly present in the winter time when temperatures can go down to -30°C. The greenhouse that will be conceived and built by the artist and the researcher is destined to resist cold weather and be efficient all year long. Thus, one of the first challenges of this project is to build an operative greenhouse to produce food in proper quantities and with good nutritive quality. From this root, we wish to grow different branches: a scientific research laboratory and an artistic program. The greenhouse thus turns into a ground for experimentation in different disciplines thanks to the implementation of various technologies. We hope to be able to collect weather and environmental data specific to a high altitude context, that will be communicated on a public internet platform, creating the first links of an open network between researchers of different fields. This is also an example for art to take place within the scope of social projects and agriculture.

1.3 I_C Project

The crossing of the wearable and the textile with new technologies, is a discipline that develops new areas of theoretical research about the functionality and symbolism of the wardrobe, and of the textile as such, which

[4] Tashi Gatsen Greenhouse project, https://tribe-against-machine.org/tashi-gatsen/

constantly generates technical and methodological rethinking in the field of creation and production of design, art and engineering, and that, through these new technologies, which can be merged with their traditional clothing, it is possible to reach or give rise to instances of transformation of the wearable and textile into a material and support with a new meaning, which expands it to extrasensory dimensions, that is, from this project, the textile connects with areas of human and non-human nature, since, through current astronomical data, the importance of our individual and collective relationship with the environment, all this addressed, for that matter, from Astronomy: a discipline that since ancient times has been a kind of object and metaobject that defines life and spaces for the various cultural developments from the textile, which leads to situations of dialogue between the subject, the communities and the environment, in order to recognize and meet the everyday world, so to install and / or approach types of artifacts that raise awareness, and that in turn, make us more vulnerable, since they could evidence the presence of mega environments (the universe, the stars, life outside planet Earth), that surround us and that urge us to look beyond what is available or encompassed, which is very necessary for the existence, life and study of consciousness (human and non-human).

2. The approaches to extract data by each participants

Here are several artworks or data extraction that has been performed by participants during the previous projects and the current H.Om.E Project, these data are expected to be the fundamental substance for the generative architecture design in the future. One of the other ideas is to empower the minority culture by giving them a voice in the data world. Philosophically, the data plays a role to connect these community and cultural contexts, as well as a tool for communication:

2.1 Process of Maria Jose Riòs

This project considers, in a fundamental way, to artistically explore the relationship between astronomy and the textile technique from its cultural value in traditional cultures, together with an exploration and action from new digital technologies for visualizing astronomical data, many of which are open in the ALMA Data Observatory, making it possible from the fabric made with tools and techniques that will allow: visualize and connect with these from the textile, which also gives room for a new possibility and support for data visualization, which will be based on the importance for our history and cultural identity, which from the millenary technique of loom weaving, remains in force until the present. today, but with certain current digital, analog and mechanical implementations.

The loom is a type of tool that made possible an important creation of information media, roles and social and daily functions, a tool that is the basis of the history of computing (Jacquard Loom as the first binary system) and of machines of current manual and automatic weaving. A Norwegian mechanical-digital loom was used to weave the astronomical data, the result being 2 surfaces of 70 cm x 90 cm.

Fig. 2. Prototype from I_C Project, astronomy data being woven into textiles with , prototype photo from Barcelona.

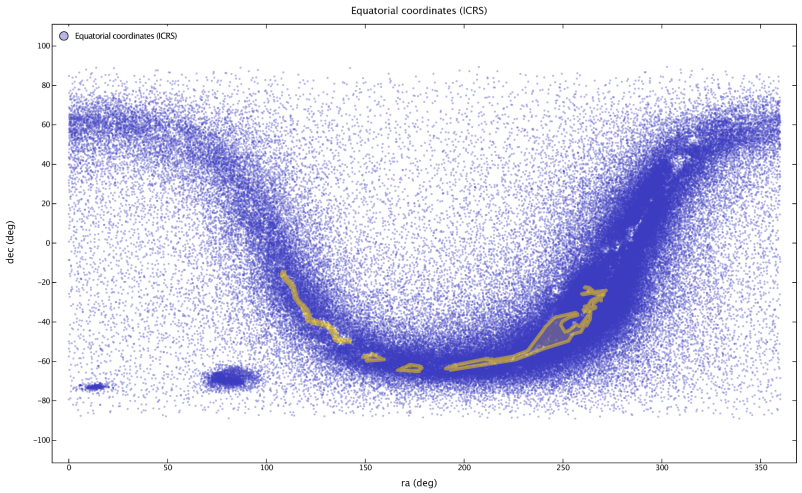

Fig. 3. The Incan dark constellation region on Gaia Project library was being made manually by the artist.

Fig. 4. A laser dye work, the image was converted from the ADQL code of one celestial within Incan dark constellation in Gaia library.

2.2 Process of Yuma Taru

Whole-plant Ramie Circulatory System

One of my interests in this collaboration is to look for ways to work with or to contribute data with an agriculture project we are currently proceeding with, a whole-plant ramie circulatory system. In the past 30 years, I have been committed to revive the traditional weaving techniques of the Tayal tribe, bring them into the modern art stage, and develop new crafts using ramie as raw materials to promote the continuation and inheritance of traditional culture. We use traditional materials, especially ramie, which has not been available in our daily life for more than half a century due to Taiwan's emphasis on synthetic fibers. I grew up learning the traditional techniques of ramie making and in recent years we have had a revitalized use of ramie. Our aim is to create a self-sufficient tribe, mainly in the family, by using a circular economy model to promote and study traditional weaving techniques. We also hope to bring back our cultural attire by reanalyzing and reducing traditional dress codes into contemporary art forms connected to our ancestral knowledge systems. Overall, our aim is to create a more sustainable and connected relationship between art, agriculture and the land. This work is also closely related to H.Om.E project, because through the new recycling experiment, I hope to bring a self-sufficient model to the tribe, a family-based unit, to promote research and weaving work. Such a model can strengthen the link between culture and economy, and can help reorganize and analyze the Atayal dress silhouette, leading to the revival of tribal culture.

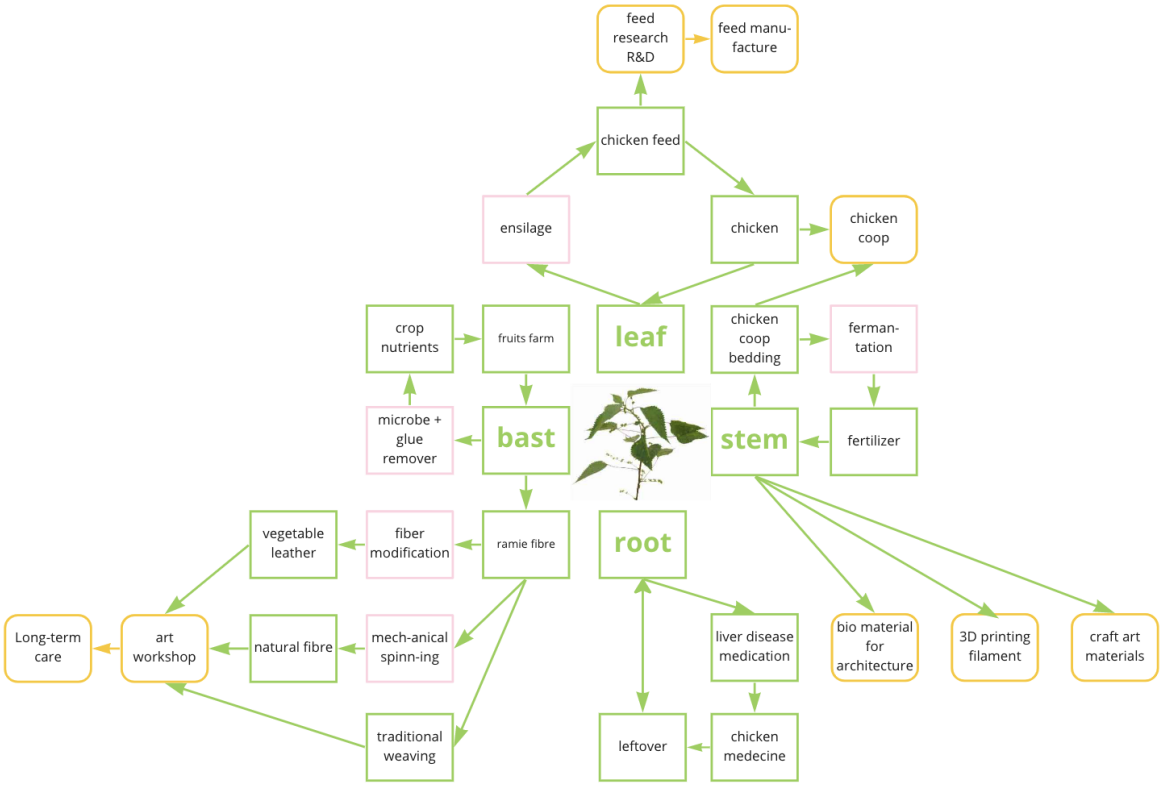

Fig. 5. Diagram of the whole-plant ramie circulatory system which is being experimented in Lihan Workshop.

Liyung Peynux

Here is one of the tribes and its traditional weaving structures we have archived. The Atayal who lived in the basin of the Taan River call themselves Liyung Peynux[5] (北勢群). Peynux means wide, referring to the wide and flat river bed. During the Japanese colonial period they were named Peishih Group for being located north of Tungshih Township. In terms of administrative division, they are scattered in S'uraw, Meilubung, Nguhu Ruma, Mapihaw, M'pwal, Malapang, T-gbing, 'Olu, Maimayung, K'ling, M-ihu and S'yux. As to Peishih costumes, both the jacket and short jacket have sleeves. Men's sleeveless jackets do exist, but are rare. Men and women alike wear chest covering and long-sleeve jackets. Men's and women's jackets are identical. They are woven with white hemp thread as warp, and have patterns of multi-color wool at the hem, on the cuff and the upper arm. Women also wear long-sleeve short jackets. Below the waist, the men wear a loincloth while the women wear a wrapskirt and leggings. Both men and women wear wrapping clothes to cover themselves and keep warm. The wrapping cloth and the woman's wrapskirt are similar in shape and structure; they vary only in size. The wrapping cloth has rows of multi- color lozenge patterns woven on a black background. [Taru]

[5]Liyung Peynux 泰雅北勢群, https://atayal.moc.gov.tw/index/zh-tw/MepenoxTribe

Fig .6. Part of the textile Pattern Structure and the look of the Liyung Peynux costume.

2.3 Process of Anchi Lin (Ciwas Tahos)

The relationship between Sunlight, Shade and Wild Bees

Currently, I am engaged in several fieldworks specifically utilizing Atayal knowledge of 'pswagi' technique in project of Pswagi Temahahoi, 'pswagi' is a term described by the Atayal elder Yumin Masaw, it is tacit knowledge[6]which uses human eyes and body to trace wild bees through the use of sunlight and shadow. I use this embodied knowledge as a pathway to find the long lost space of Atayal Temahahoi[7]. Temahahoi is an Atayal ancient oral story about a place where only women live. In the story, women could communicate with bees and reproduce without male counterpart. In this project, it is also my way of finding queer sense of belonging, a home. My aim is to link embodied knowledge along with research on genderless species found in the Taiwan mountains and recreate bodily experiences and knowledge in the form of textiles. I intend to use this method as one of the pathways to reconstruct the space of Temahahoi and reclaim data sovereignty within the context of indigenous knowledge. [Tahos]

Project of Pswagi Temahahoi

This project addresses the possibility of re-interpreting and opening up the space of Temahahoi for women's bodies and queer bodies which engages with environmental issues related to the climate crisis, particularly the plight of bees, by metaphorically intertwining the close relationship between the imbalanced natural ecology and the quiet voices of queer bodies with performance and further exploration of storing embodied knowledge with textiles. In Atayal language, 'P' is the future tense while 'S' is the instrumental case which indicates a tangible or intangible tool and 'wagi' means sun.

Fig. 7. Wild bee hives in the rock, traced with 'pswagi' technique.

[6]tacit knowledge, https://en.wikipedia.org/wiki/Tacit_knowledge

[7]Temahahoi, https://zh.wikipedia.org/zh-tw/%E8%BF%AD%E7%91%AA%E5%93%88%E9%9C%8D%E4%BC%8A

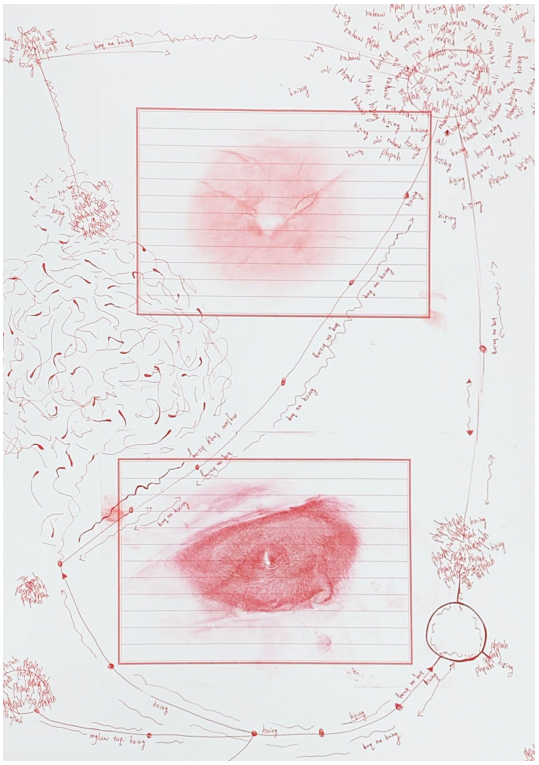

Fig. 8. Sound script and reiteration of ‘pswagi’ technique.

2.4 Process of Satoru Sugihara

To study the common essence of the textile patterns in Atayal culture and Mapuche culture and envision fictional co-evolution of the two, these imaginative computational patterns are generated by the following steps. Firstly, the eye textile pattern made of nested diamond shapes known in Atayal culture and the stepping zigzag pattern known as Andean symbol are picked. Then secondly, the algorithm to generate both patterns and also continuous transition between them is developed as a multiagent-based algorithm imagining as if those patterns are results of plants’ or creatures’ growth through time. The Atayal eye pattern also has a horizontal line symbol which represents the boundary between this world and the afterlife world where ancestors reside. This horizontal line symbol is also incorporated in the algorithm and the resulting patterns show self-organizing patterns of those symbols in the two cultures through continuously transitioning and yet distinctly discrete symbols and the distributed horizontal lines appear as if they suggest ubiquitous presence and close relationship to our ancestors. [Sugihara]

Fig. 9. The reference pattern of Atayal and Andeans pattern being used in the generative pattern generation process.

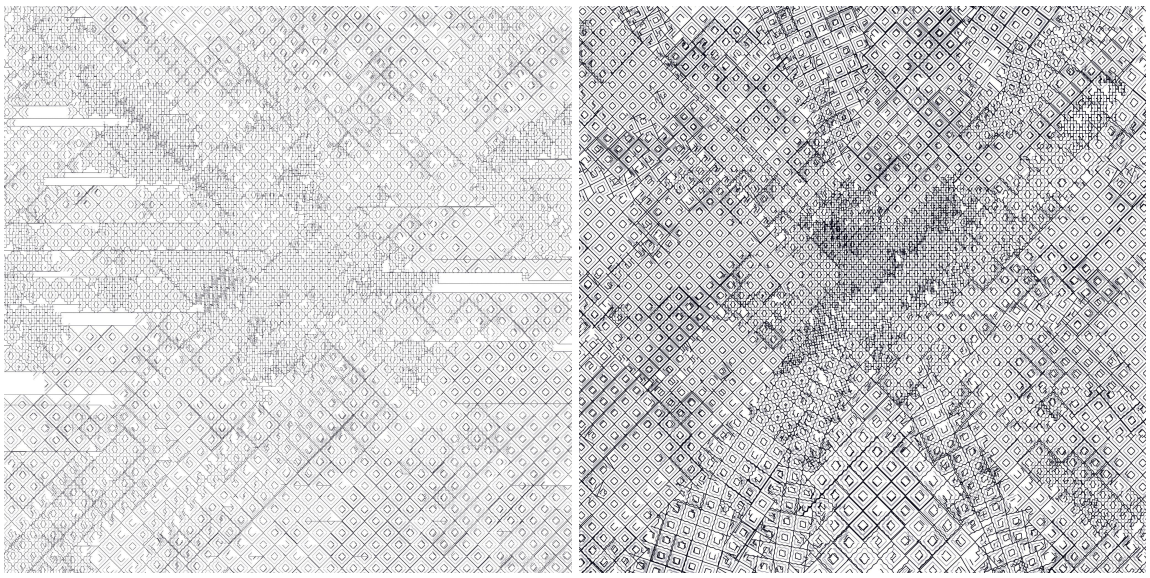

Fig. 9. The generative result is generated in Processing based on the Atayal diamond pattern and the stepping zigzag pattern known as Andean symbol.

2.5 Process of Tsansar Kunga

Influenced by the I_C Project's visualization of astronomical knowledge data and art, and in order to establish a data connection within the H.Om.E project framework, the Tibetan Tsansar in Taiwan has also begun work on organizing the Tibetan Calendar, with the assistance of Shih, and turning it into art and data. The Tibetan Calendar is a traditional calendar of the Tibetan people, which combines elements of the Indian Kalachakra calendar, the Han calendar, and Tibetan phenology. Elements such as the five elements and seven days in the Tibetan calendar were gradually introduced from the Han calendar since the 7th century. Since the introduction of the Kalachakra calendar from India in the 11th century, the Tibetan calendar has been mainly based on the Kalachakra calendar, with the Han calendar as a supplement. In the 18th century, the Han calendar was again introduced to be used for calculating solar and lunar eclipses. In addition, the relationship between Tibetan medicine and Tibetan astronomy is very close, and the relationship between medicinal plant cultivation and greenhouses in Tibet is actively being discussed.

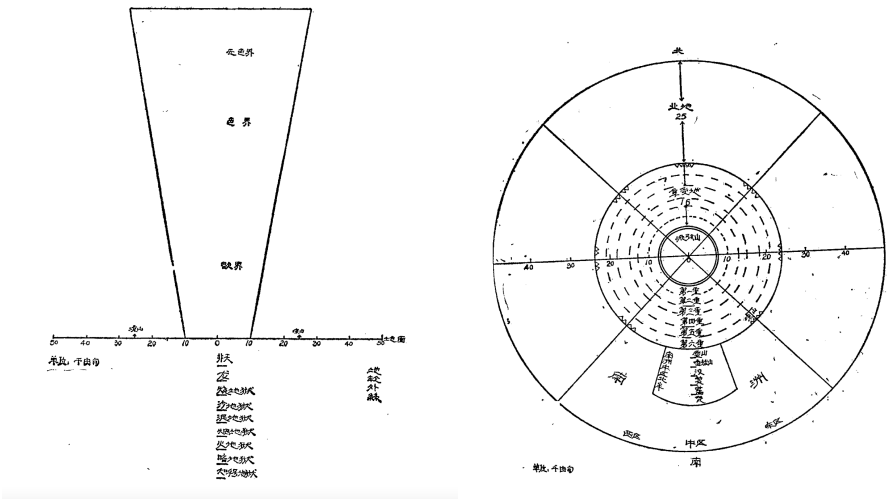

Fig. 10. The diagrams depict the Tibetan perspective of the cosmos as measured using a distant unit known as yojana योजन.

2.6 Process of Shih Wei Chieh

In my artist practice, I want to link Tibetan calligraphy and data from the Tibetan calendar to a type of solar cell technology. Dye sensitized solar cells are cheap and easy to produce at home, it's semi-transparent and can be dyed with natural dyes. Also it is a great tool to introduce the 3rd generation solar cell and the agrivoltaic concept in workshop activity. The electrode can be patternized by screen printing, therefore it's an interesting data visualization tool with photosensitivity. It was being used as a concept sculpture in a previous greenhouse project[8]of mine, also it could be a smart component in the greenhouse to strengthen the connections between the land and architecture. [Shih]

Fig. 11. Dye sensitized solar cells are dyed with natural dyes, the electrodes are patternized in the shape of three Tibetan calligraphy.

3. The woven earthship and the fictional genealogy

Three earthship architectures in size of 4 x 8 x 4 meters are expected to be generated as the conceptual sculpture of the project. The design is based on the data and pattern found in research.

H.Om.E Project focuses on the relationship between textile construction and data to create visual patterns that can be used to build architectural elements. By linking textiles with architecture, this project demonstrates how various elements can intersect and consolidate into a structure capable of providing shelter and fulfilling the role of architecture.

Many potential applications for the field of textiles as architecture, in addition to the fact that it is still controversial due to the textile materiality, but it is a great element since its structure can inspire to generate architecture with endless creative plots. That is to say, the relationship between textile construction and architectural construction no longer seems very distant, both for being architecture and for covering interior and/or exterior spaces as complements to a more solid architecture. An architecture with solid materials could be greatly inspired by the structures of how a textile is made, that is, it is very important to know the type of textile making in order to generate new possible architectures, and if we add iconography to that : data of any kind, the more meaning this architecture can acquire: data collection in a volume generated from textile construction structures, which is interesting for futures and possible worlds of coexistence and relationships.

It is hard to imagine but it could be interesting both for future Architecture and for textiles and their relationship with the surroundings, an expansive, community relationship, which brings the future closer to a past from where the original peoples of the planet have always lived together, for example textiles and its preparation from a collaborative community and in constant action to transmit information and at the same time to live. [Rios]

[8] The Mind of a Greenhouse, https://shihweichieh.com/The-Mind-of-a-Greenhouse

Fig. 12. Work of Lihan Workshop, it is a woven block with Atayal pattern which is made of stainless wires, diameter in 5 mm, it is expected to work as the component of the woven architecture which will be generated in this project.

Fig. 13. Simulations of a fictional woven architecture, the picture is generated with Dream Studio.

Reference

1. ཞ་ཨག་མཛོད་དཔལ་ངང་བ།. 1987. བོད་ཀ་ཨ་རུ་སྐད་ཅ་གཞི་དང་ནད་ལག་ལེན། **藏曆的原理與實踐**. LCCN: 94926584.
2. Yuk Hui. 2020. For a Planetary Thinking. e-Flux Journal.